

Student-Driven Microbiology Delivery**

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Ten years ago, I was the only lecture teacher for health sciences at our two-year college. The students in a three-quarter sequence of Anatomy & Physiology (I and II) and Introductory Medical Microbiology were definitely “burned out” on me by the last portion of the third course. To jazz up the delivery of information, particularly during the Microbial Diseases proportion of the course, I offered the following extra credit option: to add as many as 20 bonus points to their test point total, a student could choose one of the following tasks:

1) Read at least three current articles from valid scientific sources (such as MMWR or ASM News) on topics of their choice related to microbiology. Turn in a written summary of these articles with reference and bibliography. Share the information with the class in an oral presentation.

2) Submit a written report from an interview/field trip with someone using applied microbiology. Possible field trips include water and sewage treatment plants or various industries (food preparation, packaging, canning, serving; textile, paper, or plastics production; recycling; health services, etc.) After the field trip/interview, search for additional information on this topic to include in the report. Present the report orally to the class. Create a minimum of three test questions on important points that the class should learn from the presentation.

3) Arrange to have someone with experience in applied/medical microbiology speak to the class. Do a preliminary interview with the speaker to gain information for your introduction of the speaker. Let the speaker know the level of knowledge the class has gained through previous study, and anticipate questions and points of interest that the class may have about the topic. Have the speaker sign a video release that allows the college to tape the presentation for future use. Turn in a written summary, including test questions that cover the material presented.

Students were instructed to choose a topic that interested them and that they could relate to class information. Some related their work experiences; others chose medical situations in their families. The points earned were assessed according to the students' understanding of their topic, the adequacy of resource material and documentation of these resources, the application of the topic to the course content, the overall quality of the report, and the submission of test questions. Topics were submitted by the time of the first test (1/3 through the course) which allowed me a chance to approve the topics. Completed papers were due 2/3 through the course. The presentations then could be worked into the lecture class schedule (for the last 1/3) in an appropriate grouping of topics. I would be prepared to “chime in” with additional infor-

mation that I would have included in the lecture myself.

Both the students and I were surprised and excited about the immediate success of this approach to learning. The students seemed much more focused and interested in what their classmates had to say than in a typical straight lecture. I ended up learning a lot myself. We were all amazed at the variety of experiences our students have had in their personal lives and in their work places. Suddenly, the subject material became more real to everyone. Yes, some areas were emphasized more than others, and a few areas never were discussed at all. I had to be on my toes, following the discussion and guiding it – trying to keep mental notes of where the upcoming test emphasis should be. The value of student participation, connection with “the real world,” and using experiential learning vastly outweighed the loss of complete control over the subject matter sequence and content coverage. I'm convinced that this method gave them as much or more knowledge as the previous lecture style. With their submissions of test questions, the evaluation focus remained fair with respect to content covered and emphasized.

Since students are moved to action by “Extra Credit,” participation in this activity remains high. Leaving it as an optional task keeps the already overloaded student from feeling burdened with “busy work”. In some cases the student whose grades are high will put great effort into this task, yet the student who needs it most may not even try. It has been very fulfilling to see the student who is very timid about the oral component become encouraged by support from other students. Many of these students actually end up with the best presentations. I immensely enjoy the relieved, proud, and satisfied look on their faces. This is one time I can visibly see my students grow in confidence and maturity.

An additional benefit to the third option (that of bringing in a guest speaker) is that we gained valuable community contacts for future interaction, and were left with a set of videotapes that we could work in as needed, or assign to students as reference material in subsequent classes. We have since dropped that component, since we don't want to overuse the resource persons. It can be re-instituted periodically in order to update the videotape section.

Currently there are three teachers in the health sciences, and we have all adapted this same approach. The Student Records section of microbiology classes has become an event that we all look forward to, and we invite each other's students to attend the presentations. With the recent Information Technology Project instituted at our campus, each student leases a powerful laptop computer with Internet capability, word processing and presentation software. This has opened an entire new vista for these reports. My most recent microbiology students were able

to use Internet sources for cutting-edge information on their chosen topics, and many of them chose to create Internet sources. Students presenting a report e-mail their three questions to me, which I then forward to the whole class to create a test bank. I chose a number of the most appropriate questions to include on their last test. Many of these were the same questions that I would have asked in the typical lecture-delivered setting.

Just to list a few examples here are some special connections that were revealed by the Student Report option in the most recent class:

One Student had been treated for leukemia in Houston back in the 70's, and her room was next to David (Boy in the Bubble). She remembers playing checkers with him by

using the "arms" connected to his bubble.

Another student was a scrub nurse for orthopedics in a local hospital. He was involved with setting up and controlling the field in the state's only UV operating room for total joint replacements.

A student's mother was one of the experimental patients in the testing of penicillin in the early 1940's.

Without the "Report" vehicle, we wouldn't have been able to share these and many other fascinating and significant experiences.

***This article first appeared in Focus on Microbiology Education. Reprinted by permission.*

So, you want to go on an international teaching assignment...

Richard Halstead-Nussloch, Associate Professor of Computer Science, Southern Polytechnic State University

You might want to go on an international teaching assignment. I did. So, when an opportunity in Germany opened for me during 1998, I took it. Before leaving, I did not know what to expect. When the experience crystallized in my mind, it was better and more brilliant than my uncertain and cloudy expectations. Although my experience turned out very well, I believe that was mostly luck. It might have been otherwise.

Preparation is key to a successful international assignment. My goals are to share my observations, describe my experiences and offer some recommendations about teaching. My purpose is to aid colleagues in preparing to teach in another country. I include recommendations for personal, professional, and pedagogical preparation.

Introduction and Background

Since I was graduated from Macalester College in the '70s, I have wanted to go on an international assignment. Macalester, which has produced a Vice President of the United States and a Secretary General of the United Nations, has always had a deep international presence. During an undergraduate growth experience, Macalester fostered a personal desire to work abroad someday. This desire burned within me for many years before it was fulfilled.

Being practical I delayed my international gratification and entered graduate school at Michigan. IBM hired me a few years after my degree completion. That my employer's first name was International was not lost on me. An international assignment was the top goal on every development plan. Although never achieving an international assignment at IBM, I got better at justifying and planning one with every renewal of my development plan.

Recommendation: Look for a "fire within you."

To teach abroad, one needs to have a fire inside. There are many situations that you will encounter requiring you

take actions on your own initiative and energy. You must be motivated to adapt quickly. Do some self-reflection. If you do not find a fire inside, reconsider an international assignment.

Recommendation: Justify and plan your international assignment

Your international assignment will require much time and effort from you and others. To focus that, you need a plan. As you plan, it helps to justify the effort to yourself and others. If you have family, do not forget them in this step. Plan the assignment from preparation to re-entry. Review your plan with all interested parties for buy-in.

My Assignment and My Goals

During May and early July, 1998, I was Guest Professor of Wirtschaft Infomatik (roughly translated, Business Information Technology) at the Fachhochschule Anhalt (FHA) in Bernburg, Germany. I was the second professor from Southern Polytechnic to hold an FHA Guest Professorship. Sid Davis held the position earlier. I taught a seminar on computing and information technology for international business. These topics included international distance learning, teamwork, electronic commerce, knowledge mining, web development, etc. My students were in the International Business Program. Almost all of them spoke English. I delivered four lectures a week, and provided an exam at the end of the term.

Based on some early conversations with Sid, I decided to set some goals in collaboration with my sponsors at FHA and Southern Polytechnic. These goals turned out to be necessary and positive. When I faced one of the many decision-making situations on the assignment, they provided quick and sure guidance. My goals were:

- Promote cultural exchange.
- Teach special topic seminars covering computing for international business.